



# Neutrophil-Lymphocyte and Platelet-Lymphocyte Ratios Are Associated with Recurrent Ischemic Stroke in Patients with Embolic Stroke of Undetermined Source

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#### Dear Sir:

Many researchers have hypothesized that occult atrial fibrillation (AF) could be an etiological factor for embolic stroke of undetermined source (ESUS), since AF is often diagnosed after extended monitoring.<sup>1</sup> However, studies investigating oral anticoagulant effects in patients with ESUS did not report any benefit.<sup>2,3</sup> Thus, there is an increasing interest in alternative etiologies, including left ventricular dysfunction, atherosclerotic disease, and atrial cardiopathy without AF.

Systemic inflammation is crucial in atherosclerosis and contributes to coronary artery disease and ischemic stroke. The Canakinumab Anti-inflammatory Thrombosis Outcomes Study (CANTOS) and Colchicine Cardiovascular Outcomes Trial (COL-COT) showed reduction in cardiovascular events, including stroke, after canakinumab administration and daily low-dose colchicine, respectively.<sup>4,5</sup> Thus, attenuating subclinical inflammation could reduce cardiovascular events independent of lipid levels, possibly by increasing plaque stability and reducing progression.<sup>6</sup> A pro-inflammatory state associated with endothelial injury could predispose patients to thrombus and embolus formation. To the best of our knowledge, this hypothesis has not been tested in patients with ESUS. The neutrophil-lymphocyte ratio (NLR) and platelet-lymphocyte ratio (PLR) are hematological markers of inflammation, and their correlation with venous thromboembolism, pulmonary embolism, and cardiac thrombus formation has been evaluated.<sup>7,8</sup> We aimed to examine the correlation between NLR and PLR and newly diagnosed AF and recurrent ischemic stroke in patients with ESUS.

We retrospectively evaluated 185 consecutive patients with ESUS admitted to a stroke unit at a tertiary hospital between 2014 and 2017. Ethics approval was obtained from the local institutional review board. Written informed consent by the patients was waived due to a retrospective nature of our study. ESUS was diagnosed according to consensus criteria: non-lacunar ischemic stroke, absence of atherosclerosis causing ≥50% luminal stenosis in the extracranial or intracranial arteries, left ventricular ejection fraction ≥30%, and non-identifiable cardioembolic source.9 All patients underwent neuroimaging and vascular studies, 24-hour inpatient telemetry, and transthoracic echocardiography (TTE). Routine blood tests on admission included a full blood count (FBC), coagulation profile, creatinine and electrolyte levels, lipid profile, and glycated hemoglobin levels. FBC was performed using the automatic Sysmex XN-series Hematology Analyzer (Sysmex, Kobe,

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Japan) with random sampling, and the results were verified by a hematologist. NLR and PLR were calculated from FBC at admission by dividing the neutrophil and platelet counts, respectively, by the lymphocyte count. Patients were followed-up for newly diagnosed AF and recurrent stroke, and prolonged cardiac monitoring with an implantable loop recorder (ILR) was offered at the clinician's discretion. In patients who declined ILR, AF development was assessed through clinical examination and electrocardiography during follow-up.

The independent t-test and chi-square test were used to analyze continuous and categorical variables, respectively. Binary logistic regression was performed to determine the association between AF and recurrent stroke. A multivariable logistic regression model adjusted for age, sex, hypertension, diabetes, AF, and left atrial volume index (LAVI) was used. NLR and PLR were analyzed in separate models to avoid collinearity. Receiver operating characteristic (ROC) curves were used to identify the best cutoff values of NLR and PLR to predict new-onset AF, recurrent stroke, and composite events of AF or stroke. Based on these cutoff values, we identified a high-risk population with high LAVI ( $\geq$ 35 mL/m<sup>2</sup>) and high NLR or PLR.<sup>10</sup> This composite marker was assessed in relation to the same endpoints, as previously described. All statistical tests were performed using IBM SPSS version 26 (IBM Corp., Armonk, NY, USA), and statistically significance was set at P<0.05.

The mean age was 63.0±12.3 years with a median follow-up period of 2.1 years (interquartile range, 1.4 to 2.8); most patients were male (70.7%) and Chinese (69.2%). Seventy patients received an ILR (Medtronic Reveal LINQ, Medtronic Inc., Minneapolis, MN, USA). During follow-up, AF was newly diagnosed in 14 (7.6%) patients, while 19 (10.2%) developed recurrent stroke. Anticoagulation therapy was initiated in all patients with newly diagnosed AF; none experienced recurrent stroke during follow-up. There were no significant differences in demographics, comorbidities, laboratory findings, or major echocardiographic left ventricular findings between the AF and non-AF groups (Supplementary Table 1).

Both NLR and PLR were significantly associated with recurrent stroke (P<0.001 and P=0.011, respectively), which remained significant (P<0.001 for both NLR and PLR) after adjusting for comorbidities, AF, and LAVI (Table 1). The association with newly diagnosed AF was weaker for NLR (P=0.041) and absent for PLR (P=0.243). In the ROC analysis, the models showed a correlation with newly diagnosed AF (area under the curve [AUC] for NLR=0.64, AUC for PLR=0.59). Recurrent stroke was best predicted by NLR >2.98 (sensitivity, 94.7%; specificity, 60.2%; AUC, 0.84) and PLR >115.9 (sensitivity, 78.9%; specificity, 57.2%; AUC=0.72) (Figure 1).

Based on the ROC analyses, we adopted rounded-off cutoffs of NLR  $\geq$ 3 and PLR  $\geq$ 120 for ease of application. We assessed

| V. • 11  | New AF             |       | Recurrent stro      | ke     | Composite outcome   |        |
|--|--------------------|-------|---------------------|--------|---------------------|--------|
| Variable   | OR (95% CI)        | Р     | OR (95% CI)         | Р      | OR (95% CI)         | Р      |
| NLR and PLR for predicting outcomes*   |                    |       |                     |        |                     |        |
| NLR  | 1.41 (1.11–1.78)   | 0.041 | 2.48 (1.66–3.77)    | <0.001 | 2.50 (1.74–3.61)    | <0.001 |
| PLR  | 1.01 (0.99–1.01)   | 0.243 | 1.01 (1.01–1.02)    | 0.011  | 1.01 (1.01–1.02)    | <0.001 |
| NLR and PLR for predicting recurrent stroke after adjusting for AF and LAVI <sup>+</sup> |                    |       |                     |        |                     |        |
| NLR  | -                  | -     | 3.47 (1.88–6.39)    | <0.001 | -                   | -      |
| PLR  | -                  | -     | 1.02 (1.02–1.03)    | <0.001 | -                   | -      |
| Patients with combinations of NLR and $LAVI^{*}$   |                    |       |                     |        |                     |        |
| Low LAVI and low NLR   | 1 (Reference)      | -     | 1 (Reference)       | -      | 1 (Reference)       | -      |
| Low LAVI and high NLR  | 3.18 (0.56–18.0)   | 0.191 | 18.13 (2.25–145.89) | 0.062  | 9.02 (2.46–33.05)   | 0.001  |
| High LAVI and low NLR  | 9.21 (1.41–60.16)  | 0.022 | -                   | -      | 6.07 (1.11–33.14)   | 0.037  |
| High LAVI and high NLR   | 12.64 (2.26–70.65) | 0.004 | 49.71 (5.77–428.55) | <0.001 | 40.93 (9.78–171.20) | <0.001 |
| Patients with combinations of PLR and $LAVI^\$$  |                    |       |                     |        |                     |        |
| Low LAVI and low PLR   | 1 (Reference)      | -     | 1 (Reference)       | -      | 1 (Reference)       | -      |
| Low LAVI and high PLR  | 1.78 (0.32–10.06)  | 0.512 | 4.30 (0.90–20.67)   | 0.068  | 3.20 (0.99–10.34)   | 0.052  |
| High LAVI and low PLR  | 5.08 (0.66–39.37)  | 0.121 | 5.08 (0.66–39.37)   | 0.123  | 5.82 (1.26–26.77)   | 0.024  |
| High LAVI and high PLR   | 11.00 (2.05–59.20) | 0.005 | 11.00 (2.04–59.20)  | 0.005  | 16.00 (4.41–58.05)  | <0.001 |

 Table 1. Logistic regression analysis of patients with combinations of NLR/PLR and LAVI

NLR, neutrophil-lymphocyte ratio; PLR, platelet-lymphocyte ratio; LAVI, left atrial volume index; AF, atrial fibrillation; OR, odds ratio; CI, confidence interval. \*Adjusted for age, sex, hypertension, statin and antiplatelet use, and diabetes mellitus; <sup>†</sup>Adjusted for age, sex, hypertension, statin use, antiplatelet use, diabetes mellitus, high LAVI, and AF; <sup>†</sup>High NLR defined as  $\geq$ 3, high LAVI defined as  $\geq$ 35, <sup>§</sup>High PLR, defined as  $\geq$ 120; high LAVI, defined as  $\geq$ 35. patients with high LAVI and high NLR or PLR for newly diagnosed AF, recurrent stroke, and composite outcomes. A high NLR and LAVI were predictive of new AF (odds ratio [OR], 9.02; 95% confidence interval [CI], 2.46 to 33.05), recurrent stroke



Figure 1. Receiver operating characteristic (ROC) curves for neutrophil-lymphocyte ratio (NLR) and platelet-lymphocyte ratio (PLR) for atrial fibrillation (AF), recurrent stroke and composite events. (A) NLR and AF, (B) PLR and AF, (C) NLR and recurrent stroke, (D) PLR and recurrent stroke, (E) NLR and combined events, and (F) PLR and combined events. AUC, area under the curve.

(OR, 6.07; 95% CI, 1.11 to 33.14), and the composite endpoint (OR, 40.93; 95% CI, 9.78 to 171.20). A similar finding was observed in patients with high PLR and LAVI. An elevated NLR or PLR with a low LAVI was not significantly associated with new AF or recurrent stroke (Table 1).

This study had several limitations. First, less than half of the patients received an ILR. ILR implantation is affected by financial considerations, since it requires co-payment. Second, none of the patients in this cohort underwent a saline study or transesophageal echocardiography. In our hospital, these tests are performed only if a significant patent foramen ovale is being considered based on TTE.

In conclusion, NLR and PLR were associated with recurrent stroke in patients with ESUS, even after adjustment for comorbidities, AF, and LAVI. The results suggest two different phenotypes of ESUS—one with a strong relationship with atrial cardiomyopathy and AF, and another associated with an inflammatory pathway, atherosclerosis, and systemic disease. Further studies are required to further elucidate these phenotypes and identify more effective and targeted treatments.

## Supplementary materials

Supplementary materials related to this article can be found online at https://doi.org/10.5853/jos.2022.00486.

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#### Supplementary Table 1. Characteristics of patients with ESUS

| Variable         (n=16)         (n=16  |  | Total<br>(n=185)    | Newly-diagnosed AF  |                      |       | Recurrent stroke     |                  |        | Composite outcome   |                   |        |  |
|--|--|---------------------|---------------------|----------------------|-------|----------------------|------------------|--------|---------------------|-------------------|--------|--|
| $ \begin{array}{                                    $  | Variable   |                     | ΔE (n=14)           |                      | P     | Stroke (n-10)        |                  | D      | (new AF             |                   | D      |  |
| abs of the set of the  | Age (vr)   | 63.0+12.3           | 65.3+11.9           | 2.53 (-4.23 to 9.30) | 0.461 | 61.9+10.3            | 0.99 (0.95-1.03) | 0.681  | 63.3+10.9           | 1.00 (0.97-1.03)  | 0.861  |  |
|  | Male sex   | 128 (70.7)          | 8 (57.1)            | 1.92 (0.63-5.82)     | 0.362 | 15 (78.9)            | 0.99 (0.95-1.03) | 0.672  | 23 (69.7)           | 0.91 (0.40-2.06)  | 0.821  |  |
| No.         128 (89.2)         14 (100)         -         0.02         14 (7.3)         -         0.111         28 (84.8)         -         0.161           Maly         35 (18.9)         0 (0)         -         4 (21.1)         -         4 (12.1)         -         4 (12.1)           India         16.00         -         16.00         -         0.00         -         -         1.00         -         -         1.00         -         -         1.00         -         -         1.00         -         0.00         -         -         1.01         1.00         1.00         -         0.00         -         0.01         1.01         1.00<   | Ethnicity  | 120 (7007)          | 0 (0711)            | 102 (0100 0102)      | 0.001 | 10 (7 010)           |                  | 01072  | 20 (0017)           |                   | 0.021  |  |
| Malay         35 (18.9         0 (0)         4 (21.7)         4 (12.1)           Indian         14 (7.6)         0 (0)         1 (5.3)         1 (3.0)           Others         8 (3.3)         0 (0)         1 (5.3)         1 (3.0)           Others         18 (3.0)         0 (0)         1 (5.3)         1 (3.0)           Others         18 (3.0)         1 (2.67.7)         2 (5.7.1)         7 (5.7.1)         0 (3.2.2)         2 (8.4.8)         2 (4.0.7.5.9.1)         0 (4.1.4)           Ibabetes mellitus         6 (51.5.1)         5 (55.7)         0 (3.0.2.4.82)         0 (2.2.2)         1 (3.0.2.5.8.6)         0 (2.4.2)         1 (4.4.4.4)         1 (4.0.0.7.5.7.1)         0 (3.0.2.2.80)         0 (3.0.1 (0.8.4.82)         0 (3.0.2.4.82)         0 (3.0.1 (0.8.4.82)         0 (3.0.2.4.82)         0 (3.0.1.8.8.2)         0 (3.0.1         3 (9.1.0.3)         0 (0.2.1.2.0.0)         1 (4.0.4.4)         1 (4.0.2.3.1.5.0)         0 (3.0.1.8.8.2)         0 (3.0.1         3 (9.1.0.3.3)         0 (0.2.1.0.0.0)         1 (3.0.1.0.4.8.1.0.0.0)         1 (3.0.1.0.4.8.1.0.0.0)         1 (3.0.1.0.4.8.1.0.0.0.0)         1 (4.2.4.1         1 (4.0.2.1.4.2.0)         1 (3.0.1.0.4.8.1.0.0.0.0)         1 (3.0.1.0.4.8.1.0.0.0.0)         1 (3.0.1.0.4.8.1.0.0.0.0)         1 (3.0.1.0.4.8.1.0.0.0.0)         1 (3.0.1.0.4.8.1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0   | Chinese  | 128 (69.2)          | 14 (100)            | _                    | 0.082 | 14 (73.7)            | _                | 0.111  | 28 (84.8)           | -                 | 0.161  |  |
| India14 (7.8)0 (0)1 (5.3)1 (3.3)Others8 (4.3)0 (0)0 (0)0 (0)Cmotileties990 (2.7) <td>Malay</td> <td>35 (18.9)</td> <td>0 (0)</td> <td></td> <td></td> <td>4 (21.1)</td> <td></td> <td></td> <td>4 (12.1)</td> <td></td> <td></td>   | Malay  | 35 (18.9)           | 0 (0)               |                      |       | 4 (21.1)             |                  |        | 4 (12.1)            |                   |        |  |
| Others         8 (4.3)         0 (0)         0 (0)         0 (0)           Cmorbidities  | Indian   | 14 (7.6)            | 0 (0)               |                      |       | 1 (5.3)              |                  |        | 1 (3.0)             |                   |        |  |
| Co-motidities<br>Hypertension 138 (74.6) 12 (85.7) 2.15 (0.46-937) 0.521 16 (84.2) 1.92 (0.54-6.92) 0.322 28 (84.8) 2.14 (0.27-5.91) 0.141<br>Diabetes mellitus 65 (35.1) 5 (35.7) 0.99 (0.23-0.99) 0.992 9 (47.4) 1.77 (0.88-4.60) 0.254 12 (62.7) 1.71 (0.77-3.77) 0.193<br>(schemic heart 34 (18.4) 17.1) 0.33 (0.4-2.88) 0.471 7 (38.8) 3.00 (1.08-8.32) 0.031 8 (24.2) 1.55 (0.63-3.80) 0.344<br>disease<br>Heart failure 7 (3.8) 0 (0) - 1003 (0.4-2.88) 0.471 7 (38.8) 3.00 (1.08-8.32) 0.031 8 (24.4) 1.55 (0.63-3.80) 0.344<br>disease<br>Heart failure 7 (3.8) 0 (0) - 1007 9 (47.4) 5.09 (0.25-15.2) 0.001 14 (42.4) 5.49 (2.35-12.81) 0.001<br>Previous stroke/IIA 32 (17.3) 5 (35.7) 3.01 (0.94-9.7) 0.071 9 (47.4) 5.09 (2.05-15.2) 0.001 14 (42.4) 5.49 (2.35-12.81) 0.001<br>Previous stroke/IIA 32 (17.3) 5 (35.7) 3.01 (0.94-9.7) 0.071 9 (47.4) 5.09 (2.05-15.2) 0.001 14 (42.4) 5.49 (2.35-12.81) 0.001<br>Previous stroke/IIA 32 (17.3) 5 (35.7) 3.01 (0.94-9.7) 0.071 9 (47.4) 5.09 (2.05-15.2) 0.001 14 (42.4) 5.49 (2.35-12.81) 0.001<br>Previous stroke/IIA 32 (17.3) 5 (35.7) 3.01 (0.94-9.7) 0.071 9 (47.4) 5.09 (2.05-15.2) 0.001 14 (42.4) 5.49 (2.35-12.81) 0.001<br>Previous stroke/IIA 32 (17.3) 5 (35.7) 3.01 (0.94-9.7) 0.071 9 (47.4) 5.09 (2.05-15.2) 0.001 14 (42.4) 5.49 (2.35-12.81) 0.001<br>Hohat (who) 6.66 $\pm 2.02$ 6.72 $\pm 2.30$ 1.01 (0.75-13.7) 0.934 7.26 $\pm 2.49$ 1.14 (0.92-1.42) 0.221 7.04 $\pm 2.39$ 1.10 (0.92-1.33) 0.292<br>LD-C (mmol/L) 3.01 $\pm 1.15$ 2.79 $\pm 0.48$ 0.83 (0.50-1.38) 0.472 2.87 $\pm 0.99$ (0.97-1.01) 0.651 77.0 $\pm 2.47$ 0.99 (0.97-1.01) 0.201<br>Hematological parameters<br>Total white colount 8.18 $\pm 2.39$ 8.58 $\pm 3.06$ 1.07 (0.86-1.33) 0.523 9.18 $\pm 3.03$ 1.19 (0.99-1.43) 0.061 8.59 $\pm 2.77$ 1.42 (1.18-1.72) 0.012<br>(x10 <sup>7</sup> mm <sup>2</sup> )<br>Lymphocyte count 2.04 $\pm 0.83$ 1.67 $\pm 0.73$ 0.47 (2.02-1.16) 0.082 1.48 $\pm 0.63$ 0.25 (0.10-0.61) 0.002 1.56 $\pm 0.67$ 0.30 (0.15-0.58) 0.011<br>(x10 <sup>7</sup> mm <sup>2</sup> )<br>Hermoglobin (g/d1) 1.352 $\pm 2.01$ 1.40 $\pm 1.50$ 1.13 (0.85-1.51) 0.011 5.33 $\pm 2.88$ 1.68 (1.28-2.20) 0.001 4.97 $\pm 3.20$ 2.20 (1.59-3.04) -0.001<br>[x10 <sup>7</sup> mm <sup>2</sup> )<br>NLR 3.01 $\pm 1.94 \pm 4.86 4.$ | Others   | 8 (4.3)             | 0 (0)               |                      |       | 0 (0)                |                  |        | 0 (0)               |                   |        |  |
| hypertension         138 (74.6)         12 (85.7)         215 (0.46-9.97)         0.521         16 (84.2)         1.92 (0.54-6.92)         0.223         24 (0.47)         1.44 (0.46-3.15)         0.431           Piopertension         104 (86.2)         10 (71.4)         0.208 (0.53-6.82)         0.21         12 (6.5.2)         1.38 (0.52-6.88)         0.24         22 (6.67)         1.71 (0.77-37)         0.193           iscaser  | Co-morbidities   |                     |                     |                      |       |                      |                  |        |                     |                   |        |  |
| Diabetes mellitus         66 (35.)         5 (35.7)         0.99 (0.32-309)         0.992         9 (47.4)         1.77 (0.88-4.60)         0.243         1.4 (42.4)         1.46 (0.68-31.5)         0.431           Myeripidaemia         104 (56.2)         10 (71.4)         2.09 (0.83-6.92)         0.21         1.28 (0.52-3.68)         0.524         2.2 (6.7)         1.71 (0.77-3.7)         0.103           Myeripidaemia         0.41 (8.4)         1.41 (7.1)         0.3 (0.04-288)         0.41         7.38.8)         3.00 (10-8-32)         0.011         3.01.0  | Hypertension   | 138 (74.6)          | 12 (85.7)           | 2.15 (0.46–9.97)     | 0.521 | 16 (84.2)            | 1.92 (0.54–6.92) | 0.322  | 28 (84.8)           | 2.14 (0.77–5.91)  | 0.141  |  |
| Hyperlipidaemia         104 (56.2)         107 (1.4)         209 (0.63-6.92)         0.221         12 (63.2)         1.38 (0.52-3.68)         0.524         22 (6.7)         1.71 (0.77-377)         0.131           Schemic heart         34 (18.4)         1(7.1)         0.33 (0.04-2.68)         0.471         7 (36.8)         3.00 (1.08-8.32)         0.011         3 (1.02         3.75 (1.56-37.0)         0.011         3 (0.70 (79-13.3)         0.010           Previous torke/TIA         3.2 (17.3)         5 (3.5)         3.01 (0.94-9.71)         0.017         9 (47.4)         5.60 (2.05-15.2)         0.001         14 (42.4)         5.49 (2.35-12.8)         -0.001           Previous torke/TIA         3.2 (17.3)         5 (3.5)         3.01 (0.94-9.71)         0.011         3.76 (2.07-13.3)         0.42         4.12.1)         1.77 (0.53-5.94)         0.30           Previous torke/TIA         6.642-20         6.72-2.30         0.01 (0.75-137)         0.934         7.262-24         1.14 (0.92-1.42)         0.221         7.04-2.33         1.010 (0.92-1.30)         0.201           LD_C (mmol/L)         3.01±1.5         7.94         0.39 (0.56-1.50)         0.662         2.84±.08         0.85 (0.59-1.20)         0.201           LD_C (mmol/L)         3.0±1.5         7.04 (0.68-1.30)         0.57   | Diabetes mellitus  | 65 (35.1)           | 5 (35.7)            | 0.99 (0.32–3.09)     | 0.992 | 9 (47.4)             | 1.77 (0.68–4.60) | 0.243  | 14 (42.4)           | 1.46 (0.68–3.15)  | 0.342  |  |
| Ishemic heart<br>disease         34 (18.4)         1 (1.1)         0.33 (0.04–2.68)         0.71         7 (3.68)         300 (1.08–8.32)         0.031         8 (24.2)         1.55 (0.63–3.82)         0.44           Heart failure         7 (3.8)         0 (0)         -         1.03         3 (1.9)         5.00 (0.5–1.32)         0.01         3 (0.1)         3 (0.0)   | Hyperlipidaemia  | 104 (56.2)          | 10 (71.4)           | 2.09 (0.63–6.92)     | 0.221 | 12 (63.2)            | 1.38 (0.52–3.68) | 0.524  | 22 (66.7)           | 1.71 (0.77–3.77)  | 0.193  |  |
| Heart failure         7(38)         0(0)         -         1.003         3(15.8)         7.59 (1.56-3.70)         0.011         3(9.1)         3.70 (0.79-13.3)         0.102           Previous strok/TIA         32 (17.3)         5(35.7)         3.01 (0.94-9.71)         0.011         40(2.05-15.2)         0.001         14/42.4)         5.49 (2.35-12.8)         0.001           Berne strok/TIA         15 (8.1)         0 (0)         -         0.612         4 (21.1)         3.76 (1.70-13.3)         0.402         4 (12.1)         1.77 (0.53-5.94)         0.361           GerR (-560 m/min)         824-23.4         7.34+22.9         0.98 (0.96-1.01)         0.151         7.99+24.6         0.99 (0.97-1.01)         0.651         7.70.42.47         0.99 (0.97-1.01)         0.201           LD-C (mmol/L)         3.01 1.15         2.99 ±0.80         1.01 (0.75-137)         0.341         7.262.49         1.40 (0.92-1.42)         0.21         7.04±2.43         1.01 (0.92-1.33)         0.201           LD-C (mmol/L)         3.01 1.15         2.99 ±0.80         1.01 (0.75-1.37)         0.341         1.26 (0.95-1.23)         0.612         1.41 (1.69-1.41)         0.616         3.82 ±0.80         0.85 (0.59-1.23)         0.61         1.41 (1.91 ±1.41)         1.16 (0.99-1.10)         0.612         1.41 (1.69-1.41) <td>lschemic heart<br/>disease</td> <td>34 (18.4)</td> <td>1 (7.1)</td> <td>0.33 (0.04–2.68)</td> <td>0.471</td> <td>7 (36.8)</td> <td>3.00 (1.08–8.32)</td> <td>0.031</td> <td>8 (24.2)</td> <td>1.55 (0.63–3.82)</td> <td>0.344</td>   | lschemic heart<br>disease                                | 34 (18.4)           | 1 (7.1)             | 0.33 (0.04–2.68)     | 0.471 | 7 (36.8)             | 3.00 (1.08–8.32) | 0.031  | 8 (24.2)            | 1.55 (0.63–3.82)  | 0.344  |  |
| Previous stroke/TiA         32 (17.3)         5 (35.7)         3.01 (0.949.71)         0.071         9 (47.4)         5.60 (2.05-1.5.2)         0.001         14 (4.2.4)         5.49 (2.35-12.81)         <0.001           Peripheral vascular disease         15 (8.1)         0 (0)         -         0.612         4 (21.1)         3.76 (1.07-13.3)         0.042         4 (12.1)         1.77 (0.53-5.94)         0.361           Laboratory findings         -         0.612         4 (21.1)         3.76 (1.07-13.3)         0.042         4 (12.1)         1.77 (0.53-5.94)         0.361           Laboratory findings         -         0.98 (0.96-1.01)         0.151         79.92.44         0.99 (0.97-1.01)         0.651         77.02.247         0.99 (0.97-1.01)         0.202           LBA te (4mm/l)         6.662.202         6.72.42         0.10 (0.75-1.37)         0.934         7.26.24.9         1.14 (0.92-1.42)         0.221         7.04.24.7         0.99 (0.97-1.01)         0.202           LD-C (mm/l)         3.01 ± 1.15         2.79 ± 0.8         0.80 (36.0-1.33)         0.523         9.18 ± 3.03         1.19 (0.99-1.16)         0.661         8.92 ± 3.01         1.16 (0.99-1.16)         0.611           Neutrophilourt         5.26 ± 2.01         6.08 ± 2.96         1.07 (0.86-1.33)         0.47  | Heart failure  | 7 (3.8)             | 0 (0)               | -                    | 1.003 | 3 (15.8)             | 7.59 (1.56–37.0) | 0.011  | 3 (9.1)             | 3.70 (0.79–13.39) | 0.102  |  |
| Perpiperal vascular<br>disease         15 (8.1)         0 (0)         -         0.612         4 (21.1)         3.76 (1.07-13.3)         0.402         4 (12.1)         1.77 (0.53-5.94)         0.361           Laboratory findings         Laboratory findings         82.4+23.4         73.4+22.9         0.98 (0.96-1.01)         0.151         79.9+26.4         0.99 (0.97-1.01)         0.661         77.0+24.7         0.99 (0.97-1.01)         0.211           HbA1c (%)         6.66+2.02         6.72+2.20         1.01 (0.75-1.37)         0.934         7.26+2.49         1.14 (0.92-1.42)         0.221         7.04+2.39         1.00 (0.92-1.33)         0.221           LDL-C (mmol/L)         3.01±1.5         2.79±0.84         0.83 (0.50-1.38)         0.472         2.87±0.8         0.662         2.84±0.88         0.85 (0.59-1.23)         0.31           Total white cell count<br>(x10 <sup>7</sup> mm <sup>-1</sup> )         8.18±2.39         8.58±3.06         1.07 (0.86-1.33)         0.523         9.18±0.33         1.9 (0.99-1.43)         0.061         8.89±3.01         1.16 (0.99-1.16)         0.011           Lymphory count<br>(x10 <sup>7</sup> mm <sup>-1</sup> )         2.64±0.83         1.67±0.73         0.47 (0.20-1.10)         0.682         1.48±0.63         0.25 (0.10-0.61)         0.002         1.56±0.67         0.30 (0.15-0.58)         0.11           Lymphory char (x   | Previous stroke/TIA                                      | 32 (17.3)           | 5 (35.7)            | 3.01 (0.94–9.71)     | 0.071 | 9 (47.4)             | 5.60 (2.05–15.2) | 0.001  | 14 (42.4)           | 5.49 (2.35–12.81) | <0.001 |  |
| List in the series of the ser  | Peripheral vascular<br>disease                           | 15 (8.1)            | 0 (0)               | -                    | 0.612 | 4 (21.1)             | 3.76 (1.07–13.3) | 0.042  | 4 (12.1)            | 1.77 (0.53–5.94)  | 0.361  |  |
| eGR         6GR         Vision         824±23         73.4±22         038 (096-101)         0.151         79.9±264         0.99 (0.97-101)         0.511         77.0±273         0.99 (0.97-101)         0.211           HbA1c (%)         6.66±202         6.72±2.30         101 (0.75-1.37)         0.934         7.26±2.49         1.14 (0.92-1.42)         0.221         7.04±2.30         0.30 (0.92-1.33)         0.202           LDI-C (mon/L)         3.01±1.5         2.79±0.80         0.83 (0.50-1.30)         0.472         2.87±0.40         0.90 (0.56-1.50)         0.662         2.84±0.80         0.85 (0.59-1.23)         0.31           Total white cell count (x10/mm <sup>2</sup> )         8.18±2.39         8.58±3.00         1.07 (0.86-1.33)         0.523         9.18±3.03         1.19 (0.99-1.43)         0.61         8.92±3.01         1.16 (0.99-1.16)         0.012           (x10/mm <sup>2</sup> )         6.04±0.83         1.07 (0.26-1.52)         0.121         6.89±2.66         1.43 (1.16-1.77)         0.01         6.55±2.77         1.42 (1.18-1.72)         0.012           (x10/mm <sup>2</sup> )         2.04±0.83         1.67 (0.20-1.10)         0.602         1.48±0.63         0.25 (0.10-0.61)         0.021         1.56±0.67         0.30 (0.15-0.58)         0.011           (x10/mm <sup>2</sup> )         1.04±1.55         1.03 (0.29-1.61)<  | Laboratory findings                                      |                     |                     |                      |       |                      |                  |        |                     |                   |        |  |
| HbA1c (w)         6.66±200         6.72±2.00         101(075-1.37)         0.72         2.87±04         1.4(020-1.42)         0.21         7.04±2.30         1.0(0.02-1.33)         0.203           LD-C (mon/L)         3.01±1.5         2.97±0.80         0.83 (5.05-1.33)         0.472         2.87±0.40         0.90 (5.6-1.50)         0.66         2.84±0.80         0.85 (5.05-1.23)         0.31           I-D-C (mon/L)         8.18±2.39         8.58±3.00         1.07 (0.86-1.33)         0.523         9.18±0.33         1.91 (0.99-1.43)         0.61         8.92±3.01         1.16 (0.99-1.16)         0.61           N-utrophil court<br>(x10/mm)         5.64±2.01         6.08±2.08         1.20 (0.95-1.52)         0.121         6.89±6.63         1.33 (1.16-1.77)         0.001         6.55±7.77         1.42 (1.18-1.72)         0.01           Lymphoretic court<br>(x10/mm)         2.04±0.83         1.67±0.73         0.47 (0.20-1.10)         0.602         1.48±0.63         0.25 (0.10-0.61)         0.022         1.56±0.67         0.30 (0.15-0.58)         0.11           Hemoglobin (g/d)         1.52±2.01         1.04 (0.99-1.01)         0.602         2.59±67.2         1.00 (0.99-1.01)         0.32         1.37±2.44         1.08 (0.89-1.01)         0.452           Platele court<br>(x10/mm)         3.01±1.91         4.84±3.4  | eGFR (>60 mL/min)  | 82.4 <u>+</u> 23.4  | 73.4 <u>+</u> 22.9  | 0.98 (0.96–1.01)     | 0.151 | 79.9 <u>+</u> 26.4   | 0.99 (0.97–1.01) | 0.651  | 77.0 <u>+</u> 24.7  | 0.99 (0.97–1.01)  | 0.201  |  |
| LDL-C (mmol/l)         3.01±1.15         2.79±0.8         0.83 (0.50-1.3)         0.472         2.87±0.9         0.90 (0.56-1.5)         0.62         2.84±0.8         0.85 (0.59-1.2)         0.01           H  | HbA1c (%)  | 6.66 <u>+</u> 2.02  | 6.72 <u>+</u> 2.30  | 1.01 (0.75–1.37)     | 0.934 | 7.26 <u>+</u> 2.49   | 1.14 (0.92–1.42) | 0.221  | 7.04 <u>+</u> 2.39  | 1.10 (0.92–1.33)  | 0.292  |  |
| Hematological parameters           Total white cell count<br>(x10 <sup>7</sup> /mm <sup>3</sup> )         8.18±2.39         8.58±3.06         1.07 (0.86-1.33)         0.523         9.18±3.03         1.19 (0.99-1.43)         0.061         8.92±3.01         1.16 (0.99-1.16)         0.061           Neutrophil count<br>(x10 <sup>7</sup> /mm <sup>3</sup> )         5.26±2.01         6.08±2.96         1.20 (0.95-1.52)         0.121         6.89±2.66         1.43 (1.16-1.77)         0.001         6.55±2.77         1.42 (1.18-1.72)         0.012           Lymphocyte count<br>(x10 <sup>7</sup> /mm <sup>3</sup> )         2.04±0.83         1.67±0.73         0.47 (0.20-1.10)         0.082         1.48±0.63         0.25 (0.10-0.61)         0.002         1.56±0.67         0.30 (0.15-0.58)         0.011           Hemoglobin [g/dl)         13.52±2.01         1.40±1.50         1.13 (0.85-1.51)         0.401         1.36±2.54         1.03 (0.81-1.31)         0.832         13.77±2.14         1.08 (0.89-1.31)         0.452           Placet count<br>(x10 <sup>7</sup> /m <sup>m</sup> )         2.60±2.819         2.44±6.74         1.00 (0.99-1.01)         0.452         2.59±6.72         1.00 (0.99-1.01)         0.513         1.00 (0.99-1.01)         0.518         1.01 (1.01-1.02         0.001         1.93±7.917         1.01 (1.01-1.02         0.001         1.93±7.917         1.01 (1.01-1.02         0.001         1.93±7.917         1.01 (1.01-1.02 <td>LDL-C (mmol/L)</td> <td>3.01±1.15</td> <td>2.79<u>+</u>0.84</td> <td>0.83 (0.50–1.38)</td> <td>0.472</td> <td>2.87<u>+</u>0.94</td> <td>0.90 (0.56–1.50)</td> <td>0.662</td> <td>2.84<u>+</u>0.88</td> <td>0.85 (0.59–1.23)</td> <td>0.391</td>   | LDL-C (mmol/L)   | 3.01±1.15           | 2.79 <u>+</u> 0.84  | 0.83 (0.50–1.38)     | 0.472 | 2.87 <u>+</u> 0.94   | 0.90 (0.56–1.50) | 0.662  | 2.84 <u>+</u> 0.88  | 0.85 (0.59–1.23)  | 0.391  |  |
| Total white cell count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )       8.88±308       1.07 (0.86-1.33)       0.523       9.18±3.03       1.19 (0.99-1.43)       0.061       8.92±3.01       1.16 (0.99-1.16)       0.061         Neutrophil count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )       5.26±2.01       6.08±2.96       1.20 (0.95-1.52)       0.121       6.89±2.66       1.43 (1.16-1.77)       0.001       6.55±2.77       1.42 (1.18-1.72)       0.012         Lymphocyte count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )       2.04±0.83       1.67±0.73       0.47 (0.20-1.10)       0.082       1.48±0.63       0.25 (0.10-0.61)       0.002       1.56±0.67       0.30 (0.15-0.58)       0.011         Hemoglobin (g/dll       13.52±2.01       14.0±1.50       1.13 (0.85-1.51)       0.401       13.65±2.54       1.03 (0.81-1.31)       0.832       13.77±2.14       1.08 (0.89-1.31)       0.452         Platelet count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )       260.2±81.9       244.4±67.4       1.00 (0.99-1.01)       0.452       259.5±67.2       1.00 (0.99-1.01)       0.971       253.1±6.66       1.00 (0.99-1.01)       0.583         NLR       3.01±1.91       4.48±3.64       1.30 (1.06-1.59)       0.011       5.33±2.88       1.68 (1.28-2.20)       -0.001       193.7±10.7       1.01 (1.01-1.02)       -0.012         Ethocardiographic<br>parameters       LVEF 30%-50%       25 (1.3.8)       1 (.7.1)       <  | Hematological parameter                                  | ſS                  |                     |                      |       |                      |                  |        |                     |                   |        |  |
| Neutrophil count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )         5.26±2.01         6.08±2.96         1.20 (0.95-1.52)         0.121         6.89±2.66         1.43 (1.16-1.77)         0.001         6.55±2.77         1.42 (1.18-1.72)         0.012           Lymphocyte count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )         2.04±0.83         1.67±0.73         0.47 (0.20-1.10)         0.082         1.48±0.63         0.25 (0.10-0.61)         0.002         1.56±0.67         0.30 (0.15-0.58)         0.011           Hemoglobin (g/dL)         13.52±2.01         14.0±1.50         1.13 (0.85-1.51)         0.401         13.65±2.54         1.03 (0.81-1.31)         0.822         13.77±2.14         1.08 (0.89-1.31)         0.452           Platelet count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )         260.2±81.9         244.4±67.4         1.00 (0.99-1.01)         0.452         259.5±67.2         1.00 (0.99-1.01)         0.971         253.1±66.6         1.00 (0.99-1.01)         0.452           PLR         3.01±1.91         4.48±3.64         1.30 (1.06-1.59)         0.011         5.33±2.88         1.68 (1.28-2.20)         <0.001   | Total white cell count<br>(×10³/mm³)                     | 8.18 <u>+</u> 2.39  | 8.58 <u>+</u> 3.06  | 1.07 (0.86–1.33)     | 0.523 | 9.18 <u>+</u> 3.03   | 1.19 (0.99–1.43) | 0.061  | 8.92 <u>+</u> 3.01  | 1.16 (0.99–1.16)  | 0.061  |  |
| Lymphocyte count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )         2.04±0.83         1.67±0.73         0.47 (0.20-1.10)         0.082         1.48±0.63         0.25 (0.10-0.61)         0.002         1.56±0.67         0.30 (0.15-0.58)         0.011           Hemoglobin (g/dL)         13.52±2.01         14.0±1.50         1.13 (0.85-1.51)         0.401         13.65±2.54         1.03 (0.81-1.31)         0.832         13.77±2.14         1.08 (0.89-1.31)         0.452           Platelet count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )         240.2±81.9         244.4±67.4         1.00 (0.99-1.01)         0.452         259.5±67.2         1.00 (0.99-1.01)         0.971         253.1±66.6         1.00 (0.99-1.01)         0.453           NLR         3.01±1.91         4.48±3.44         1.30 (1.66-1.59)         0.011         5.33±2.88         1.68 (1.28-2.20)         <0.01  | Neutrophil count<br>(×10³/mm³)                           | 5.26 <u>+</u> 2.01  | 6.08 <u>+</u> 2.96  | 1.20 (0.95–1.52)     | 0.121 | 6.89 <u>+</u> 2.66   | 1.43 (1.16–1.77) | 0.001  | 6.55 <u>+</u> 2.77  | 1.42 (1.18–1.72)  | 0.012  |  |
| Hemoglobin (g/dl)       13.52±2.01       14.0±1.50       1.13 (0.85-1.51)       0.401       13.65±2.54       1.03 (0.81-1.31)       0.832       13.77±2.14       1.08 (0.89-1.31)       0.452         Platelet count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )       260.2±81.9       244.4±67.4       1.00 (0.99-1.01)       0.452       259.5±67.2       1.00 (0.99-1.01)       0.971       253.1±66.6       1.00 (0.99-1.01)       0.53         NLR       3.01±1.91       4.48±3.64       1.30 (1.06-1.59)       0.011       5.33±2.88       1.68 (1.28-2.20)       <0.001       4.97±3.20       2.20 (1.59-3.04)       <0.001         PLR       146.8±7.64       173.3±07.6       1.01 (0.99-1.01)       0.182       208.7±1082       1.01 (1.01-1.02)       0.001       133.7±07.7       1.01 (1.01-1.02)       <0.001         FLR       146.8±7.64       173.3±07.6       1.01 (0.99-1.01)       0.182       208.7±1082       1.01 (1.01-1.02)       0.001       133.7±07.7       1.01 (1.01-1.02)       <0.001         FLY       30%-50%       25 (1/3.8)       1 (7.1)       1.82 (0.23-14.63)       0.571       3 (15.8)       1.45 (0.39-5.44)       0.581       4 (12.1)       1.03 (0.32-3.26)       0.901         LA volume (mL)       47.4±17.8       62.3±2.02       1.04 (1.01-1.07)       0.002       53.6±15.8   | Lymphocyte count<br>(×10 <sup>3</sup> /mm <sup>3</sup> ) | 2.04 <u>+</u> 0.83  | 1.67 <u>+</u> 0.73  | 0.47 (0.20–1.10)     | 0.082 | 1.48 <u>+</u> 0.63   | 0.25 (0.10–0.61) | 0.002  | 1.56 <u>+</u> 0.67  | 0.30 (0.15–0.58)  | 0.011  |  |
| Platelet count<br>(x10 <sup>3</sup> /mm <sup>3</sup> )       260.2±81.9       244.4±67.4       1.00 (0.99-1.01)       0.452       259.5±67.2       1.00 (0.99-1.01)       0.971       253.1±66.       1.00 (0.99-1.01)       0.583         NLR       3.01±1.91       4.48±3.64       1.30 (1.06-1.59)       0.011       5.33±2.88       1.68 (1.28-2.20)       <0.01   | Hemoglobin (g/dL)  | 13.52 <u>+</u> 2.01 | 14.0±1.50           | 1.13 (0.85–1.51)     | 0.401 | 13.65 <u>+</u> 2.54  | 1.03 (0.81–1.31) | 0.832  | 13.77 <u>+</u> 2.14 | 1.08 (0.89–1.31)  | 0.452  |  |
| NLR       3.01±1.91       4.48±3.64       1.30 (1.06-1.59)       0.011       5.33±2.88       1.68 (1.28-2.20) <0.001       4.97±3.20       2.20 (1.59-3.04)       <0.001         PLR       146.8±764       173.3±076       1.01 (0.99-1.01)       0.182       208.7±108.2       1.01 (1.01-1.02)       0.001       137.±107.7       1.01 (1.01-1.02)       <0.001  | Platelet count<br>(×10³/mm³)                             | 260.2 <u>+</u> 81.9 | 244.4 <u>+</u> 67.4 | 1.00 (0.99–1.01)     | 0.452 | 259.5 <u>+</u> 67.2  | 1.00 (0.99–1.01) | 0.971  | 253.1 <u>+</u> 66.6 | 1.00 (0.99–1.01)  | 0.583  |  |
| PLR       146.8±76.4       173.3±107.6       1.01 (0.99–1.01)       0.182       208.7±108.2       1.01 (1.01–1.02)       0.001       193.7±107.7       1.01 (1.01–1.02)       <0.001         Echocardiographic<br>parameters       b <tdb< td=""><td>NLR</td><td>3.01<u>+</u>1.91</td><td>4.48<u>+</u>3.64</td><td>1.30 (1.06–1.59)</td><td>0.011</td><td>5.33<u>+</u>2.88</td><td>1.68 (1.28–2.20)</td><td>&lt;0.001</td><td>4.97<u>+</u>3.20</td><td>2.20 (1.59–3.04)</td><td>&lt;0.001</td></tdb<>  | NLR  | 3.01 <u>+</u> 1.91  | 4.48 <u>+</u> 3.64  | 1.30 (1.06–1.59)     | 0.011 | 5.33 <u>+</u> 2.88   | 1.68 (1.28–2.20) | <0.001 | 4.97 <u>+</u> 3.20  | 2.20 (1.59–3.04)  | <0.001 |  |
| Echocardiographic         parameters         LVEF 30%-50%       25 (1/3.8)       1 (7.1)       1.82 (0.23-14.63)       0.571       3 (15.8)       1.45 (0.39-5.44)       0.581       4 (12.1)       1.03 (0.32-3.26)       0.961         LA volume (mL)       47.4±17.8       62.3±22.0       1.04 (1.01-1.07)       0.002       53.6±15.8       1.02 (0.99-1.05)       0.112       57.3±3.3       1.04 (1.02-1.06)       0.001         LA volume index       27.7±10.3       36.6±12.2       1.08 (1.03-1.13)       0.002       32.1±9.2       1.05 (1.01-1.10)       0.031       34.0±10.6       1.07 (1.03-1.10)       <0.001   | PLR  | 146.8 <u>+</u> 76.4 | 173.3±107.6         | 1.01 (0.99–1.01)     | 0.182 | 208.7 <u>+</u> 108.2 | 1.01 (1.01–1.02) | 0.001  | 193.7±107.7         | 1.01 (1.01–1.02)  | <0.001 |  |
| LVEF 30%-50%       25 (1/3.8)       1 (7.1)       1.82 (0.23-14.63)       0.571       3 (15.8)       1.45 (0.39-5.44)       0.581       4 (12.1)       1.03 (0.32-3.26)       0.961         LA volume (mL)       47.4±17.8       62.3±22.0       1.04 (1.01-1.07)       0.002       53.6±15.8       1.02 (0.99-1.05)       0.112       57.3±3.3       1.04 (1.02-1.06)       0.001         LA volume index       27.7±10.3       36.6±12.2       1.08 (1.03-1.13)       0.002       32.1±9.2       1.05 (1.01-1.10)       0.031       34.0±10.6       1.07 (1.03-1.10)       <0.001  | Echocardiographic parameters                             |                     |                     |                      |       |                      |                  |        |                     |                   |        |  |
| LA volume (mL)       47.4±17.8       62.3±22.0       1.04 (1.01-1.07)       0.002       53.6±15.8       1.02 (0.99-1.05)       0.112       57.3±3.3       1.04 (1.02-1.06)       0.001         LA volume index (mL/m <sup>2</sup> )       27.7±10.3       36.6±12.2       1.08 (1.03-1.13)       0.002       32.1±9.2       1.05 (1.01-1.10)       0.031       34.0±10.6       1.07 (1.03-1.10)       <0.001   | LVEF 30%-50%   | 25 (1/3.8)          | 1 (7.1)             | 1.82 (0.23–14.63)    | 0.571 | 3 (15.8)             | 1.45 (0.39–5.44) | 0.581  | 4 (12.1)            | 1.03 (0.32–3.26)  | 0.961  |  |
| $ \begin{array}{c} \mbox{LA volume index} & 27.7 \pm 10.3 & 36.6 \pm 12.2 & 1.08 & (1.03 - 1.13) & 0.002 & 32.1 \pm 9.2 & 1.05 & (1.01 - 1.10) & 0.031 & 34.0 \pm 10.6 & 1.07 & (1.03 - 1.10) & <0.001 & (mL/m^2) \\ \mbox{LA diameter index} & 22.0 \pm 4.3 & 23.7 \pm 3.8 & 1.00 & (0.98 - 1.01) & 0.851 & 22.9 \pm 2.7 & 0.99 & (0.98 - 1.01) & 0.812 & 23.2 \pm 3.2 & 1.00 & (0.99 - 1.01) & 0.742 & (mm/m^2) & (0.98 - 1.01) & 0.851 & 22.9 \pm 2.7 & 0.99 & (0.98 - 1.01) & 0.812 & 23.2 \pm 3.2 & 1.00 & (0.99 - 1.01) & 0.742 & (0.98 - 1.01) & 0.742 & (0.98 - 1.01) & 0.851 & 22.9 \pm 2.7 & 0.99 & (0.98 - 1.01) & 0.812 & 23.2 \pm 3.2 & 1.00 & (0.99 - 1.01) & 0.742 & (0.98 - 1.01) & 0.851 & 22.9 \pm 2.7 & 0.99 & (0.98 - 1.01) & 0.812 & 23.2 \pm 3.2 & 1.00 & (0.99 - 1.01) & 0.742 & (0.98 - 1.01) & 0.851 & 22.9 \pm 2.7 & 0.99 & (0.98 - 1.01) & 0.812 & 23.2 \pm 3.2 & 1.00 & (0.99 - 1.01) & 0.742 & (0.98 - 1.01) & 0.851 & 22.9 \pm 2.7 & 0.99 & (0.98 - 1.01) & 0.812 & 23.2 \pm 3.2 & 1.00 & (0.99 - 1.01) & 0.742 & (0.98 - 1.01) & 0.851 & 22.9 \pm 2.7 & 0.99 & (0.98 - 1.01) & 0.812 & 23.2 \pm 3.2 & 1.00 & (0.99 - 1.01) & 0.742 & (0.98 - 1.01) & 0.812 & 0.851 $  | LA volume (mL)   | 47.4±17.8           | 62.3 <u>+</u> 22.0  | 1.04 (1.01–1.07)     | 0.002 | 53.6 <u>+</u> 15.8   | 1.02 (0.99–1.05) | 0.112  | 57.3 <u>+</u> 3.3   | 1.04 (1.02–1.06)  | 0.001  |  |
| LA diameter index 22.0±4.3 23.7±3.8 1.00 (0.98–1.01) 0.851 22.9±2.7 0.99 (0.98–1.01) 0.812 23.2±3.2 1.00 (0.99–1.01) 0.742 (mm/m <sup>2</sup> )  | LA volume index<br>(mL/m²)                               | 27.7 <u>±</u> 10.3  | 36.6 <u>+</u> 12.2  | 1.08 (1.03–1.13)     | 0.002 | 32.1 <u>+</u> 9.2    | 1.05 (1.01–1.10) | 0.031  | 34.0 <u>+</u> 10.6  | 1.07 (1.03–1.10)  | <0.001 |  |
|  | LA diameter index<br>(mm/m²)                             | 22.0 <u>+</u> 4.3   | 23.7 <u>+</u> 3.8   | 1.00 (0.98–1.01)     | 0.851 | 22.9 <u>+</u> 2.7    | 0.99 (0.98–1.01) | 0.812  | 23.2 <u>+</u> 3.2   | 1.00 (0.99–1.01)  | 0.742  |  |
| LVEDVi (mL/m <sup>2</sup> ) 60.5±18.5 58.9±15.0 1.00 (0.96–1.02) 0.763 67.7±31.0 1.02 (0.99–1.04) 0.081 63.9±25.5 1.01 (0.99–1.03) 0.211   | LVEDVi (mL/m <sup>2</sup> )                              | 60.5±18.5           | 58.9±15.0           | 1.00 (0.96–1.02)     | 0.763 | 67.7 <u>+</u> 31.0   | 1.02 (0.99–1.04) | 0.081  | 63.9 <u>+</u> 25.5  | 1.01 (0.99–1.03)  | 0.211  |  |
| LVMi (g/m <sup>2</sup> ) 99.7±28.7 102.4±27.2 1.01 (0.98–1.02) 0.734 104.9±28.2 1.01 (0.99–1.02) 0.411 103.8±27.4 1.01 (0.99–1.02) 0.382   | LVMi (g/m²)  | 99.7 <u>+</u> 28.7  | 102.4 <u>+</u> 27.2 | 1.01 (0.98–1.02)     | 0.734 | 104.9 <u>+</u> 28.2  | 1.01 (0.99–1.02) | 0.411  | 103.8 <u>+</u> 27.4 | 1.01 (0.99–1.02)  | 0.382  |  |

Values are presented as mean $\pm$ standard deviation or number (%).

ESUS, embolic stroke of undetermined source; AF, atrial fibrillation; OR, odds ratio; CI, confidence interval; TIA, transient ischemic attack; eGFR, estimated glomerular filtration rate; HbA1c, hemoglobin A1c; LDL-C, low-density lipoprotein cholesterol; NLR, neutrophil-lymphocyte ratio; PLR, platelet-lymphocyte ratio; LVEF, left ventricular ejection fraction; LA, left atrium; LVEDVi, left ventricular end-diastolic volume index; LVMi, left ventricular mass index.